RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/086,177B

Source: 1FW16,

Date Processed by STIC: 7/31/06

ENTERED

IFW16

RAW SEQUENCE LISTING   DATE: 07/31/2006
PATENT APPLICATION: **US/10/086,177B**   TIME: 11:09:32

Input Set : **A:\80421-1.APP**
Output Set: **N:\CRF4\07312006\J086177B.raw**

```
 3 <110> APPLICANT: Tudan, Christopher R.
 4         Merzouk, Ahmed
 5         Arab, Lakhdar
 6         Saxena, Geeta
 7         Eaves, Connie J.
 8         Cashman, Johanne
 9         Clark-Lewis, Ian
10         Salari, Hassan
11         University of British Columbia
12         Chemokine Therapeutics Corporation
14 <120> TITLE OF INVENTION: CXC Chemokine Receptor 4 Agonist Peptides
16 <130> FILE REFERENCE: 080421-000100US
18 <140> CURRENT APPLICATION NUMBER: US 10/086,177B
19 <141> CURRENT FILING DATE: 2002-02-26
21 <150> PRIOR APPLICATION NUMBER: CA 2,305,036
22 <151> PRIOR FILING DATE: 2000-04-12
24 <150> PRIOR APPLICATION NUMBER: US 60/232,425
25 <151> PRIOR FILING DATE: 2000-09-14
27 <150> PRIOR APPLICATION NUMBER: CA 2,335,109
28 <151> PRIOR FILING DATE: 2001-02-23
30 <150> PRIOR APPLICATION NUMBER: US 09/835,107
31 <151> PRIOR FILING DATE: 2001-04-12
33 <160> NUMBER OF SEQ ID NOS: 214
35 <170> SOFTWARE: PatentIn version 3.3
37 <210> SEQ ID NO: 1
38 <211> LENGTH: 67
39 <212> TYPE: PRT
40 <213> ORGANISM: Homo sapiens
42 <220> FEATURE:
43 <223> OTHER INFORMATION: human SDF-1alpha
45 <400> SEQUENCE: 1
46 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Glu Ser
47 1               5                   10                  15
48 His Val Ala Arg Ala Asn Val Lys His Leu Lys Ile Leu Asn Thr Pro
49                 20                  25                  30
50 Asn Cys Ala Leu Gln Ile Val Ala Arg Leu Lys Asn Asn Asn Arg Gln
51             35                  40                  45
52 Val Cys Ile Asp Pro Lys Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys
53     50                  55                  60
54 Ala Leu Asn
55 65
57 <210> SEQ ID NO: 2
58 <211> LENGTH: 93
```

```
 59 <212> TYPE: PRT
 60 <213> ORGANISM: Homo sapiens
 62 <220> FEATURE:
 63 <223> OTHER INFORMATION: human SDF-1 precursor, PBSF
 65 <400> SEQUENCE: 2
 66 Met Asn Ala Lys Val Val Val Val Leu Val Leu Val Leu Thr Ala Leu
 67 1               5                  10                  15
 68 Cys Leu Ser Asp Gly Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys
 69             20                  25                  30
 70 Arg Phe Phe Glu Ser His Val Ala Arg Ala Asn Val Lys His Leu Lys
 71         35                  40                  45
 72 Ile Leu Asn Thr Pro Asn Cys Ala Leu Gln Ile Val Ala Arg Leu Lys
 73     50                  55                  60
 74 Asn Asn Asn Arg Gln Val Cys Ile Asp Pro Lys Leu Lys Trp Ile Gln
 75 65                  70                  75                  80
 76 Glu Tyr Leu Glu Lys Ala Leu Asn Lys Arg Phe Lys Met
 77                 85                  90
 79 <210> SEQ ID NO: 3
 80 <211> LENGTH: 93
 81 <212> TYPE: PRT
 82 <213> ORGANISM: Homo sapiens
 84 <220> FEATURE:
 85 <223> OTHER INFORMATION: human SDF-1beta
 87 <400> SEQUENCE: 3
 88 Met Asn Ala Lys Val Val Val Val Leu Val Leu Val Leu Thr Ala Leu
 89 1               5                  10                  15
 90 Cys Leu Ser Asp Gly Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys
 91             20                  25                  30
 92 Arg Phe Phe Glu Ser His Val Ala Arg Ala Asn Val Lys His Leu Lys
 93         35                  40                  45
 94 Ile Leu Asn Thr Pro Asn Cys Ala Leu Gln Ile Val Ala Arg Leu Lys
 95     50                  55                  60
 96 Asn Asn Asn Arg Gln Val Cys Ile Asp Pro Lys Leu Lys Trp Ile Gln
 97 65                  70                  75                  80
 98 Glu Tyr Leu Glu Lys Ala Leu Asn Lys Arg Phe Lys Met
 99                 85                  90
101 <210> SEQ ID NO: 4
102 <211> LENGTH: 17
103 <212> TYPE: PRT
104 <213> ORGANISM: Artificial Sequence
106 <220> FEATURE:
107 <223> OTHER INFORMATION: synthetic CXCR4 agonist SDF-1(1-17), CTCE9902
109 <400> SEQUENCE: 4
110 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Glu Ser
111 1               5                  10                  15
112 His
115 <210> SEQ ID NO: 5
116 <211> LENGTH: 6
117 <212> TYPE: PRT
```

```
118 <213> ORGANISM: Artificial Sequence
120 <220> FEATURE:
121 <223> OTHER INFORMATION: CXCR4 agonist sequence motif within 20 amino acids
122       of the N-terminus
124 <400> SEQUENCE: 5
125 Arg Phe Phe Glu Ser His
126 1               5
128 <210> SEQ ID NO: 6
129 <211> LENGTH: 9
130 <212> TYPE: PRT
131 <213> ORGANISM: Artificial Sequence
133 <220> FEATURE:
134 <223> OTHER INFORMATION: synthetic SDF-1 peptide analogue CXCR4 agonist
136 <400> SEQUENCE: 6
137 Lys Pro Val Ser Leu Ser Tyr Arg Cys
138 1               5
140 <210> SEQ ID NO: 7
141 <211> LENGTH: 9
142 <212> TYPE: PRT
143 <213> ORGANISM: Artificial Sequence
145 <220> FEATURE:
146 <223> OTHER INFORMATION: synthetic CXCR4 agonist SDF-1(1-9)-2-C9/C9-cysteine dimer,
147       CTCE9901
149 <220> FEATURE:
150 <221> NAME/KEY: MISC_FEATURE
151 <222> LOCATION: (7)..(7)
152 <223> OTHER INFORMATION: dimerised by formation of a disulfide bond between two Cys
153       residues in position 7 of two SEQ ID NO:7 peptides
155 <400> SEQUENCE: 7
156 Lys Pro Val Ser Leu Ser Tyr Arg Cys
157 1               5
159 <210> SEQ ID NO: 8
160 <211> LENGTH: 10
161 <212> TYPE: PRT
162 <213> ORGANISM: Artificial Sequence
164 <220> FEATURE:
165 <223> OTHER INFORMATION: portion of synthetic CXCR4 agonist SDF-1(1-9)-2
166       (Compound #3)
168 <220> FEATURE:
169 <221> NAME/KEY: MOD_RES
170 <222> LOCATION: (10)..(10)
171 <223> OTHER INFORMATION: Xaa = Lys whose epsilon amino group forms a covalent amide
172       bond with the alpha amino group of Cys at position 9 of
173       KPVSLSYRC (SEQ ID NO:9), thereby forming a dimer
175 <400> SEQUENCE: 8
W--> 176 Lys Pro Val Ser Leu Ser Tyr Arg Cys Xaa
177 1               5                       10
179 <210> SEQ ID NO: 9
180 <211> LENGTH: 9
```

```
      181 <212> TYPE: PRT
      182 <213> ORGANISM: Artificial Sequence
      184 <220> FEATURE:
      185 <223> OTHER INFORMATION: portion of synthetic CXCR4 agonist SDF-1(1-9)-2
      186       (Compound #3)
      188 <220> FEATURE:
      189 <221> NAME/KEY: MOD_RES
      190 <222> LOCATION: (9)..(9)
      191 <223> OTHER INFORMATION: Xaa = Cys whose alpha amino group forms a covalent amide
      192       bond with the epsilon amino group of Lys at position 10
      193       of KPVSLSYRCX (SEQ ID NO:8), thereby forming a dimer
      195 <400> SEQUENCE: 9
W-->  196 Lys Pro Val Ser Leu Ser Tyr Arg Xaa
      197 1               5
      199 <210> SEQ ID NO: 10
      200 <211> LENGTH: 9
      201 <212> TYPE: PRT
      202 <213> ORGANISM: Artificial Sequence
      204 <220> FEATURE:
      205 <223> OTHER INFORMATION: portion of synthetic CXCR4 agonist dimer of SDF-1 amino
      206       acids 1-8
      208 <220> FEATURE:
      209 <221> NAME/KEY: MOD_RES
      210 <222> LOCATION: (9)..(9)
      211 <223> OTHER INFORMATION: Xaa = Lys whose epsilon amino group forms a covalent amide
      212       bond with the alpha amino group of Arg at position 8 of
      213       KPVSLSYX (SEQ ID NO:11), thereby forming a dimer
      215 <400> SEQUENCE: 10
W-->  216 Lys Pro Val Ser Leu Ser Tyr Arg Xaa
      217 1               5
      219 <210> SEQ ID NO: 11
      220 <211> LENGTH: 8
      221 <212> TYPE: PRT
      222 <213> ORGANISM: Artificial Sequence
      224 <220> FEATURE:
      225 <223> OTHER INFORMATION: portion of synthetic CXCR4 agonist dimer of SDF-1 amino
      226       acids 1-8
      228 <220> FEATURE:
      229 <221> NAME/KEY: MOD_RES
      230 <222> LOCATION: (8)..(8)
      231 <223> OTHER INFORMATION: Xaa = Arg whose alpha amino group forms a covalent amide
      232       bond with the epsilon amino group of Lys at position 9
      233       of KPVSLSYRX (SEQ ID NO:10), thereby forming a dimer
      235 <400> SEQUENCE: 11
W-->  236 Lys Pro Val Ser Leu Ser Tyr Xaa
      237 1               5
      239 <210> SEQ ID NO: 12
      240 <211> LENGTH: 30
      241 <212> TYPE: PRT
```

```
242 <213> ORGANISM: Artificial Sequence
244 <220> FEATURE:
245 <223> OTHER INFORMATION: synthetic CXCR4 agonist SDF-1(1-14)-(G)-3-SDF-1(55-67)
246       acid
248 <220> FEATURE:
249 <221> NAME/KEY: MISC_FEATURE
250 <222> LOCATION: (17)..(17)
251 <223> OTHER INFORMATION: Gly in position 17 may be present or absent
253 <400> SEQUENCE: 12
254 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
255 1               5                   10                  15
256 Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
257             20                  25                  30
259 <210> SEQ ID NO: 13
260 <211> LENGTH: 31
261 <212> TYPE: PRT
262 <213> ORGANISM: Artificial Sequence
264 <220> FEATURE:
265 <223> OTHER INFORMATION: synthetic CXCR4 agonist SDF-1(1-14)-(G)-4-SDF-1(55-67)
266       acid, CTCE0013
268 <220> FEATURE:
269 <221> NAME/KEY: MISC_FEATURE
270 <222> LOCATION: (17)..(18)
271 <223> OTHER INFORMATION: Gly in positions 17 and/or 18 may independently be
272       present or absent
274 <400> SEQUENCE: 13
275 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
276 1               5                   10                  15
277 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
278             20                  25                  30
280 <210> SEQ ID NO: 14
281 <211> LENGTH: 30
282 <212> TYPE: PRT
283 <213> ORGANISM: Artificial Sequence
285 <220> FEATURE:
286 <223> OTHER INFORMATION: synthetic CXCR4 agonist SDF-1(1-14)-(G)-3-SDF-1(55-67)
287       amide
289 <220> FEATURE:
290 <221> NAME/KEY: MISC_FEATURE
291 <222> LOCATION: (17)..(17)
292 <223> OTHER INFORMATION: Gly in position 17 may be present or absent
294 <220> FEATURE:
295 <221> NAME/KEY: MOD_RES
296 <222> LOCATION: (30)..(30)
297 <223> OTHER INFORMATION: AMIDATION
299 <400> SEQUENCE: 14
300 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
301 1               5                   10                  15
302 Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 07/31/2006
PATENT APPLICATION: US/10/086,177B   TIME: 11:09:33

Input Set : A:\80421-1.APP
Output Set: N:\CRF4\07312006\J086177B.raw

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

```
Seq#:8; Xaa Pos. 10
Seq#:9; Xaa Pos. 9
Seq#:10; Xaa Pos. 9
Seq#:11; Xaa Pos. 8
Seq#:31; Xaa Pos. 9
Seq#:32; Xaa Pos. 8
Seq#:35; Xaa Pos. 2,5
Seq#:36; Xaa Pos. 2,5
Seq#:39; Xaa Pos. 20
Seq#:40; Xaa Pos. 20
Seq#:41; Xaa Pos. 28
Seq#:42; Xaa Pos. 28
Seq#:43; Xaa Pos. 20
Seq#:44; Xaa Pos. 20
Seq#:45; Xaa Pos. 28
Seq#:46; Xaa Pos. 28
Seq#:50; Xaa Pos. 2,5
Seq#:51; Xaa Pos. 2,5,14
Seq#:52; Xaa Pos. 1
Seq#:53; Xaa Pos. 2,5
Seq#:54; Xaa Pos. 2,5,14
Seq#:55; Xaa Pos. 1
Seq#:58; Xaa Pos. 14
Seq#:59; Xaa Pos. 1
Seq#:61; Xaa Pos. 14
Seq#:62; Xaa Pos. 1
Seq#:64; Xaa Pos. 14
Seq#:65; Xaa Pos. 1
Seq#:68; Xaa Pos. 1
Seq#:70; Xaa Pos. 14
Seq#:71; Xaa Pos. 1
Seq#:73; Xaa Pos. 14
Seq#:74; Xaa Pos. 1
Seq#:76; Xaa Pos. 14
Seq#:77; Xaa Pos. 1
Seq#:79; Xaa Pos. 14
Seq#:80; Xaa Pos. 1
Seq#:82; Xaa Pos. 14
Seq#:83; Xaa Pos. 1
Seq#:85; Xaa Pos. 14
Seq#:86; Xaa Pos. 1
Seq#:88; Xaa Pos. 14
Seq#:89; Xaa Pos. 1
Seq#:91; Xaa Pos. 14
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 07/31/2006
PATENT APPLICATION: **US/10/086,177B**   TIME: 11:09:33

Input Set : **A:\80421-1.APP**
Output Set: **N:\CRF4\07312006\J086177B.raw**

Seq#:92; Xaa Pos. 1
Seq#:94; Xaa Pos. 14
Seq#:95; Xaa Pos. 1
Seq#:97; Xaa Pos. 14
Seq#:98; Xaa Pos. 1
Seq#:100; Xaa Pos. 14
Seq#:101; Xaa Pos. 1

```
L:176  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8 after pos.:0
L:196  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:0
L:216  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:0
L:236  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:0
L:746  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:0
L:767  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32 after pos.:0
L:773  M:300 W: (50) Intentionally skipped Sequence, : Sequence Id (33) SEQUENCE:
L:778  M:300 W: (50) Intentionally skipped Sequence, : Sequence Id (34) SEQUENCE:
L:824  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:0
L:873  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:0
L:966  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39 after pos.:16
L:1003 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:40 after pos.:16
L:1035 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:41 after pos.:16
L:1072 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42 after pos.:16
L:1104 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:43 after pos.:16
L:1141 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:44 after pos.:16
L:1173 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45 after pos.:16
L:1210 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:46 after pos.:16
L:1341 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:50 after pos.:0
L:1382 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:0
L:1413 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:52 after pos.:0
L:1460 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:53 after pos.:0
L:1501 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:54 after pos.:0
L:1532 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:55 after pos.:0
L:1605 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:58 after pos.:0
L:1635 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:59 after pos.:0
L:1689 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:61 after pos.:0
L:1719 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:62 after pos.:0
L:1763 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:64 after pos.:0
L:1793 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:65 after pos.:0
L:1882 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:68 after pos.:0
L:1926 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:70 after pos.:0
L:1956 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:71 after pos.:0
L:2010 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:73 after pos.:0
L:2040 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:74 after pos.:0
L:2084 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:76 after pos.:0
L:2114 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:77 after pos.:0
L:2168 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:79 after pos.:0
L:2198 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:80 after pos.:0
L:2242 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:82 after pos.:0
L:2272 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:83 after pos.:0
L:2326 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:85 after pos.:0
L:2356 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:86 after pos.:0
L:2400 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:88 after pos.:0
L:2430 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:89 after pos.:0
L:2484 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:91 after pos.:0
L:2514 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:92 after pos.:0
L:2558 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:94 after pos.:0
```

VERIFICATION SUMMARY   DATE: 07/31/2006
PATENT APPLICATION: **US/10/086,177B**   TIME: 11:09:33

Input Set : **A:\80421-1.APP**
Output Set: **N:\CRF4\07312006\J086177B.raw**

```
L:2588 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:95 after pos.:0
L:2642 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:97 after pos.:0
L:2672 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:98 after pos.:0
L:2716 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:100 after pos.:0
```